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Heavy Metals in the Environment III: An Overview

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The third Research Triangle Conference on Heavy Metals in the Environment was sponsored by the National Institute of Environmental Health Sciences and the Environmental Metals Group in cooperation with the University of North Carolina School of Medicine to examine the potential health impact of increased or altered energy production on the emission of toxic trace metals into the environment.

The first session of the meeting was concerned with levels of trace metals such as arsenic, copper, iron, and zinc in coal from the eastern and western United States. These elements were found to be concentrated in coal flyash of fossil fuel power plants. Accumulation of metals in soils around power plants appeared to highly dependent upon the efficiency of the flyash precipitators. Emission of mercury and arsenic into runoff water from geothermal power plants was reported to result in the subsequent contamination of rivers receiving this discharge.

Platinum and palladium were discussed during the second session of the conference in relation to their current presence in the environment and possible emission from catalytic converter pollution control devices that have been placed on 1975 automobiles. The physiological, toxicological, and biochemical effects of these metals on laboratory animals were also reported.

On the second day of the conference, papers concerning the levels of metals in foods and their higher abundance in marine organisms were presented. The biochemical and pathological effects of lead on the central nervous system were examined and followed by reports concerning the synthesis, transport and fate of cadmium metallothionein. Papers dealing with nickel and mercury toxicity rounded out the meeting.

Toxic metals have always been constituents of man's environment. In the past, human health problems from excessive exposure to these elements have usually occurred under rather specific environmental or occupational circumstances. Large-scale mobilization and release of metals into the environment as a result of increased or altered energy technologies are potential problems whose magnitude has not been previously encountered.

It was clear from reports presented at the meeting that the predicted massive utilization of fossil fuel sources to satisfy the future energy needs of this country may clearly lead to the increased emission of toxic metals into the environment unless precautions are taken. The potential health impact of toxic trace metals released during energy production should, hence, be a point of concern in the development of energy policies and technologies.

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